Original article

Factors influencing pre-hospital delay among patients with acute myocardial infarction in Iran

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Keywords: *pre-hospital; delay; acute myocardial infarction; cardiovascular disease*

Background Acute myocardial infarction (AMI) is the leading cause of morbidity and disability among Iranian population. Pre-hospital delay is an important cause of increasing early and also late mortality in AMI. Thus the aim of the present study was to identify the factors influencing pre-hospital delay among patients with AMI in Iran.

Methods Between August 2010 and May 2011, a cross-sectional and single-center survey was conducted on 162 consecutive patients with ST-elevation myocardial infarction (STEMI) admitted to Cardiac Care Unit (CCU) of Dr. Heshmat Hospital, Rasht. All patients were interviewed by the third author within 7 days after admission by using a four-part questionnaire including socio-demographic, clinical, situational and cognitive factors. Data were analyzed by descriptive and Logistic regression model at $P < 0.05$ using SPSS 16.

Results Mean age was (60.11±12.29) years in all patients. Majority of patients (65.4%) were male. The median of pre-hospital delay was 2 hours, with a mean delay of 7.4 hours (±16.25 hours). Regression analysis showed that admission in weekend (P <0.04, OR=1.033, 95% CI=1.187–2.006) and misinterpretation of symptoms as cardiac origin (P <0.002, OR=1.986, 95% CI=1.254–3.155) and perceiving symptoms to not be so serious (P <0.003, OR=3.264, 95% CI=1.492–7.142) were factors influencing pre-hospital delay > 2 hours.

Conclusions Our findings highlight the importance of cognitive factors on decision-making process and pre-hospital delays. Health care providers can educate the public on AMI to enable them recognize the signs and symptoms of AMI correctly and realize the benefits of early treatment.

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Coronary heart disease (CHD) is the first killer of Iranian population. Annually, there are about 138 000 deaths due to CHD (about 40% of total deaths). About 50% of deaths occur due to acute myocardial infarction (AMI). It is a leading cause of morbidity and disability in Iranian population.[1]

AMI is a clinical condition for which delays in seeking care can have significant and adverse consequences on patients' outcomes.[2,3] Morbidity and mortality can significantly reduce if individuals receive treatment shortly after the onset of symptoms.[4,5] The survival chance of patients is significantly higher when treatment is initiated within first hours after the onset of symptoms but indeed few patients arrive at hospital within this period.[6-9]

Pre-hospital delay is a prominent cause of increasing early and also late mortality in AMI.[10-12] A pre-hospital delay may increase cardiac damage and diminish survival chance of individuals.[13] Pre-hospital delay remains unacceptably long with median intervals averaging 2 to 4 hours[13-16] and interventions to decline delays have accompanied limited success.[17,18]

Many studies have considered factors related to long pre-hospital delay in AMI patients.[4,14] However, the causes of this delay are not completely understood, and results from earlier studies are inconclusive. Some studies have shown that older age[16,17] and female gender[5] might be the risk factors for a prolonged delay on the part of the patient. On the contrary, others did not indicate age and gender differences regarding pre-hospital delay.[9,12,19] Patients with a history of AMI had shorter pre-hospital delay than those without this condition.[5,17] However, similar studies did not discover any association between pre-hospital delay and a history of AMI.[6,19]

Factors associated with prolonged pre-hospital delay might vary among population resulting from diversity in ethnicity, culture and socio-economic status.[14] The

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